

REMARKS

This Amendment is filed in response to the Office Action dated December 29, 2006. For the following reasons the application should be allowed. No new matter is introduced by this amendment. The abstract of disclosure has been amended to address the languages objected to by the Examiner. Claims 1-15 are presented for examination. Claims 1, 5, 7-8, 10-11 and 13 have been amended to further clarify an aspect of the present claimed subject matter. Support for the amended claims 1, 5, 7, 10 and 13 is found in page 33, lines 2-21 of the specification. Subject matter of claims 5-6 and 13-15 have been changed to "recording medium" to comply with the statutory subject matter requirement under 35 U.S.C. § 101.

The Objection of the Specification

The abstract of the disclosure is objected to for informalities. Applicants have amended the abstract of the disclosure as suggested by the Examiner. Accordingly, Applicants respectfully submit that the pending objection of the Specification has been overcome.

The rejections of Claims under 35 U.S.C. § 101

Claims 5-6 and 13-15 were rejected under 35 U.S.C. § 101 for non-compliance with the statutory subject matter requirement. In response to the current rejection, Applicants have amended claims 5-6 and 13-15 to change the "program" to a "recording medium which stores thereon a program," as suggested by the Examiner. Applicants respectfully submit that, as amended, claims 5-6 and 13-15 are in full compliance with the requirements of 35 U.S.C. § 101.

Accordingly, Applicants respectfully submit that the pending rejection of claims 5-6 and 13-15 has been overcome.

The Rejections of Claims under 35 U.S.C. § 103 (a)

Claims 1, 3 and 5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lim (U.S. Patent No. 5,588,027, hereinafter “Lim”) in view of Shiino et al. (U.S. Patent No. 5,751,776, hereinafter “Shiino”). Claims 2, 4 and 6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lim in view of Shiino as applied to claims 1, 3 and 5 and in further view of Huttunen (U.S. Patent No. 7,016,434, hereinafter “Huttunen”). Claims 7-8, 10-11 and 13-14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mody et al. (U.S. Pre-Grant Publication No. 2002/0181509, hereinafter “Mody”) in view of Shiino. Claims 9, 12 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mody, in view of Shiino as applied to claims 7, 10 and 13 and in further view of Huttunen.

Applicants respectfully submit that the rejected claims are patentable over either Lim, Shiino, Huttunen or Mody, taken alone or in combination, for the following reasons.

Each of the rejected independent claims, i.e., claims 1, 5, 7, 10 and 13, recites that “a phase error estimator” “estimates a phase error of the received signal” “during a period of time in which the correlation processor is performing its process, and in parallel with the processing in the correlation processor.” The independent claims further recite that the phase error estimator “estimates response characteristic of the received signal” “when the processing in the correlation processor ends.”

As addressed in the first embodiment, the initial value computation unit 10 performs the correlation processing between the baseband received signals 300 and the training signal 302 in the interval of the training signal 302. The phase error estimating unit 12 estimates error between

the baseband received signal 300 and the training signal 302 at the same time with the correlation processing. When the interval of the training signal 302 ends, the phase error compensating unit 46 compensates the correlation values 312 outputted from the initial value computation units 10. (See FIG. 4 and page 33, lines 2-21)

However, neither of the cited prior art references discloses or suggests that the correlation processing is simultaneous with the estimation of the phase error and compensation of the phase error begins after the correlation processing ends.

In Shiino, the phase rotating unit 5 compensates for a received signal by rotating the phase of the received signal(S12). Thereafter, the correlation performing unit correlates compensated signal inputted from the phase rotating unit 5.(S13) Shiino performs the signal compensation before correlation processing. In addition, Shiino does not disclose simultaneous correlation processing with estimation of the phase error.

In Lim, the differential phase detecting circuit (phase error estimator) 211 estimates a phase difference after the time synchronizer (correlation processor) 218 performs a correlation processing between the output of the intermediate buffer memory 217 and a reference training modulation signal. This is in contrast with the present invention that operates the correlation processing simultaneously with the estimation of the phase error. Moreover, Lim does not disclose that compensation of the phase error begins after the correlation processing ends.

Mody does not teach or suggest an estimation of phase error as addressed by the Examiner in paragraph 6 of the Office Action. Thus, Mody fails to teach the simultaneous

correlation processing with the estimation of the phase error and the compensation is performed after the correlation processing.

Huttunen's estimation of error (step 51) determines an error of signal path corresponding to the timeslot. Hutunen does not estimate a signal phase error. Huttunen fails to teach the simultaneous correlation processing with the estimation of the phase error and that compensation is performed after correlation processing as well.

As none of Lim, Shiino, Mody and Huttunen discloses or suggests that correlation processing is performed simultaneously with estimation of the phase error, and compensation of the phase error begins after correlation processing ends, it is clear that Lim, Shiino, Mody and Huttunen do not render the present invention, as recited by the amended independent claims 1, 5, 7, 10 and 13, obvious. Claims 2-4, 6, 8-9, 11-12 and 14-15 dependent upon and including all limitations of claims 1, 5, 7, 10 and 13 respectively, are nonobvious as well.

For all of the foregoing reasons, it is respectfully submitted that claims 1-15 are patentable over Lim, Shiino, Mody and Huttunen.

Application No.: 10/715,487

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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